

WHAT IS CLAIMED IS:

1. A projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment, the projection apparatus comprising:

(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping;

(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam;

(c) a second spatial light modulator for forming a second modulated light beam from said second illumination beam;

(d) a beam aligner for directing said first and second modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; and

said projection lens directing said first modulated beam to said display surface to form the first tile segment and directing said second modulated beam to said display surface to form the second tile segment.

2. A projection apparatus according to claim 1 wherein said beam aligner comprises a polarization beamsplitter.

3. A projection apparatus according to claim 1 wherein said first spatial light modulator is a transmissive LCD.

4. A projection apparatus according to claim 1 wherein said first spatial light modulator is a reflective LCD.

5. A projection apparatus according to claim 1 further comprising an analyzer in the path of said first modulated beam.

6. A projection apparatus according to claim 1 wherein said illumination system comprises a polarization beamsplitter.

7. A projection apparatus according to claim 1 wherein said illumination system comprises a light source selected from the group consisting of a lamp and an LED.

8. A projection apparatus according to claim 1 wherein said illumination system sequentially provides light having a first color, followed by light having a second color, followed by light having a third color.

9. A projection apparatus according to claim 1 further comprising a half-wave plate in the path of said first modulated beam.

10. A projection apparatus for forming an image on a display surface as a plurality of adjacent image tile segments, the projection apparatus comprising:

(a) for each image tile segment, a corresponding spatial light modulator for modulating incident illumination to form a modulated light beam;

(b) a beam aligner for directing each said modulated light beam along a path parallel to the optical axis of a projection lens, wherein separate said paths are substantially non-overlapping; and

(c) said projection lens projecting each said modulated light beam onto the display surface, forming each image tile segment thereby.

11. A projection apparatus according to claim 10 wherein said beam aligner comprises a polarization beamsplitter.

12. A projection apparatus according to claim 10 wherein at least one said spatial light modulator is a transmissive LCD.

13. A projection apparatus according to claim 10 wherein at least one said spatial light modulator is a reflective LCD.

14. A projection apparatus according to claim 10 further comprising at least one analyzer in the path of at least one said modulated beam.

15. A projection apparatus according to claim 10 further comprising at least one half-wave plate in the path of at least one said modulated beam.

16. A projection apparatus for forming a tiled image on a display surface, said tiled image comprising at least four contiguous image tile segments, the projection apparatus comprising:

(a) an illumination system providing a first illumination beam having a first polarization state and a second illumination beam having a second polarization state, said first and second illumination beams being substantially non-overlapping;

(b) a first spatial light modulator for forming a first modulated light beam from said first illumination beam;

(c) a second spatial light modulator for forming a second modulated light beam from said first illumination beam;

(d) a third spatial light modulator for forming a third modulated light beam from said second illumination beam;

(e) a fourth spatial light modulator for forming a fourth modulated light beam from said second illumination beam;

(f) a beam aligner for directing said first, second, third, and fourth modulated light beams along adjacent parallel paths, in the direction of the optical axis of a projection lens; and

(g) said projection lens directing each said modulated beam to the display surface to form each of said at least four contiguous image tile segments.

17. A method for forming a tiled image on a display surface, said tiled image comprising at least a first image tile segment and an adjacent second image tile segment, the method comprising:

- (a) providing a first illumination beam having a first polarization state and a second illumination beam having the orthogonal polarization state;
- (b) forming a first modulated light beam from said first illumination beam;
- (c) forming a second modulated light beam from said second illumination beam;
- (d) aligning said first and second modulated light beams along separate, adjacent parallel paths, in the direction of the optical axis of a projection lens; and
- (e) projecting at least said first modulated beam to said display surface to form the first tile segment and said second modulated beam to said display surface to form the adjacent second tile segment.

18. A method for forming a tiled image according to claim 17 wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a reflective spatial light modulator.

19. A method for forming a tiled image according to claim 17 wherein the step of forming said first modulated light beam comprises the step of directing said first illumination beam to a transmissive spatial light modulator.

20. A method for forming a tiled image according to claim 17 wherein the step of providing said first illumination beam comprises the step of providing a beam having a repeating sequence of different colors.